IN THE SPECIFICATION

1. Please amend the paragraphs bridging pages 2 and 3, from line 19 on page 2 thru line 7 on page 3, as follows:

Such repeatedly performed flooding provides from time to time unstable database information to a network of the corresponding peer group, increasing the unstable factors of the overall network. Therefore, an increase in the network scale and the number of the terminals increases [[a]] the possibility that ~~there will exist~~ unstable terminals will exist.

~~I have~~ The present invention has found that overflooding due to address registration of an unstable asynchronous transfer mode terminal in an asynchronous transfer mode switch can be inconvenient and undesirable. Efforts have been made to improve networks in general and asynchronous transfer mode networks in particular.

2. Please amend the first complete paragraph on page 4, from lines 13 thru line 15, as follows:

While these recent efforts provide advantages, ~~I note~~ it is noted that they fail to adequately provide a convenient and efficient method for restricting overflooding due to address registration of an unstable asynchronous transfer mode terminal in an asynchronous transfer mode switch.

3. Please amend the two paragraphs on page 5, from lines 4 thru line 14, as follows:

To achieve the above objects and others, there is provided a method for restricting overflooding on a private network-to-network interface (PNNI) in an asynchronous transfer mode (ATM) switch. The method comprises the steps of: registering an address of an asynchronous transfer mode terminal using an interim local management interface (ILMI) protocol and then determining whether the asynchronous transfer mode terminal is stable or not; and ~~deferring~~, when the asynchronous transfer mode terminal is unstable, deferring

application of the private network-to-network interface until the asynchronous transfer mode terminal becomes stable.

Preferably, the asynchronous transfer mode terminal is determined to be unstable[[,]] when a time value determined by subtracting a last connect time from a current time is less than a preset maximum tolerant time. Further, the private network-to-network interface protocol is applied when the asynchronous transfer mode terminal is determined to be stable.

4. Please amend the first complete paragraph on page 6, from lines 4 thru 14, as follows:

To achieve these and other objects in accordance with the principles of the present invention, as embodied and broadly described, the present invention provides a method for restricting overflooding in an asynchronous transfer mode switch, comprising: when registering an address of an asynchronous transfer mode terminal through an interim local management interface protocol, determining when there is an address of said asynchronous transfer mode terminal in a data table for an unstable terminal; registering a current time in a last connect time field in an entry of said table[[,]] when there is an address of said asynchronous transfer mode terminal registered in said data table; comparing a time value determined by subtracting a last connect time from a current time with a preset maximum tolerant time[[,]] to determine when said asynchronous transfer mode terminal is stable; and, when said asynchronous transfer mode terminal is not stable, not applying private network-to-network interface.

5. Please amend the second paragraph on page 8, lines 6 and 7, as follows:

FIG. 1 is a diagram illustrating [[a]] <u>the</u> structure of an asynchronous transfer mode (ATM) switch network[[,]] in accordance with the principles of the present invention;

6. Please amend the paragraphs bridging pages 9 and 11, from line 10 on page 9

thru line 6 on page 11, as follows:

FIG. 1 illustrates [[a]] the structure of an asynchronous transfer mode (ATM) switch network according an embodiment of the present invention. Referring to FIG. 1, first and second asynchronous transfer mode (ATM) terminals 100 and 400 are connected to first and second asynchronous transfer mode switchs 200 and 300, respectively, through associated interim local management interface (ILMI), respectively. Further, the first asynchronous transfer mode switch 200 is connected to the second asynchronous transfer mode switch 300 through a private network-to-network interface (PNNI).

FIG. 2 ~~illustrates~~ is a diagram illustrating a table data structure of an unstable terminal according to an embodiment of the present invention. Referring to FIG. 2, the table data structure includes a table index, a terminal's asynchronous transfer mode (ATM) address, a last connect time of the asynchronous transfer mode terminal, and a last disconnect time of the asynchronous transfer mode terminal.

FIG. 3 ~~illustrates~~ is a flowchart illustrating a procedure for restricting overflooding of an unstable asynchronous transfer mode terminal during address registration of an asynchronous transfer mode terminal through interim local management interface (ILMI) according to an embodiment of the present invention.

Operation of a preferred embodiment will be described with reference to FIGS. 1 to 3. At step 101, an address registration event of an asynchronous transfer mode (ATM) terminal is generated from the asynchronous transfer mode terminal through an interim local management interface (ILMI). An example of an address registration event is as follows. When an ATM terminal is connected to an ATM switch through the ILMI protocol, an address of the ATM terminal, for example an internet protocol (IP) address, is required to be registered [[to]] with the ATM switch.

At step 102, the asynchronous transfer mode switch determines whether ~~there exists~~ an address of the asynchronous transfer mode terminal is registered in the table. ~~The step~~ Step 103 is performed after step 102 when no address of the asynchronous transfer mode terminal is registered in the table. ~~The step~~ Step 104 is performed after step 102 when an address of the asynchronous transfer mode terminal is registered in the table.

At step 103, a table entry is created and the current time is placed in the last connect time field. At step 104, when ~~there exists~~ an address of the asynchronous transfer mode terminal is registered in the table, the asynchronous transfer mode switch creates an entry [[of]] in the table in the form as depicted in FIG. 2, and changes the last connect time in the created entry to the current time. That is, the asynchronous transfer mode switch registers the current time in the last connect time field of the table entry.

7. Please amend the paragraphs bridging pages 12 thru 15, from line 14 on page 11 thru the last line on page 15.

~~The step~~ Step 107 is performed after step 103 is performed. Furthermore, [[the]] step 107 is performed after step 105 is performed[[,]] if the time value is larger than the preset maximum tolerant time. At step 107, the asynchronous transfer mode switch changes the last disconnect time to "-1". At step 108, the asynchronous transfer mode switch determines that the asynchronous transfer mode terminal [[as]] is a stable terminal and applies a private network-to-network interface module.

~~The step~~ Step 106 is performed after step 105 is performed[[,]] if it is determined in step 105 that the time value determined by subtracting the last disconnect time from the current time is not larger than the preset maximum tolerant time. At step 106, the asynchronous transfer mode switch determines that the asynchronous transfer mode terminal, which has requested address registration, [[as]] is an unstable asynchronous transfer mode terminal and waits for the asynchronous transfer mode terminal to be stable.

If a timer event of the unstable asynchronous transfer mode terminal is generated during the waiting period, [[a]] the procedure of FIG. 4 will be performed. The timer event is an activity ~~of terminating~~ wherein the activated timer is terminated when the ATM terminal is connected to the ATM switch through the ILMI protocol. Referring to FIG. 4, when a timer event of the unstable asynchronous transfer mode terminal is generated in step 201, the asynchronous transfer mode switch determines in step 202 whether every entry of the table shown in FIG. 2 has been processed. If every entry has been processed, the asynchronous transfer mode switch ends the operation. ~~Otherwise~~ Conversely, if [[not]] every entry has not been processed, the asynchronous transfer mode switch selects a next entry in the table in step 203 and then proceeds to step 204. In step 204, the asynchronous transfer mode switch determines whether the last disconnect time is "-1". If the last disconnect time is "-1", the asynchronous transfer mode switch determines that the asynchronous transfer mode terminal [[as]] is an address-summarized asynchronous transfer mode terminal in step 205 and then returns to step 202. ~~Otherwise~~ Conversely, if the last disconnect time is not "-1", the asynchronous transfer mode switch determines in step 206 whether a time value determined by subtracting the last disconnect time from the current time is larger than a preset maximum tolerant time. The preset maximum tolerant time is a fixed reference value. If the time value is larger than the maximum tolerant time, the asynchronous transfer mode switch changes the last disconnect time to "-1" in step 208.

Subsequently, the asynchronous transfer mode switch determines that the asynchronous transfer mode terminal [[as]] is a stable asynchronous transfer mode terminal, and applies the private network-to-network interface (PNNI) module, in step 209. However, if it is determined in step 206 that the time value determined by subtracting the last disconnect time from the current time is not larger than the maximum tolerant time, the asynchronous transfer mode switch determines that the asynchronous transfer mode terminal associated with the presently selected entry [[as]] is an unstable terminal, and waits for the asynchronous transfer mode terminal to be stable, in step 207. The asynchronous transfer

mode terminal is determined to be an unstable terminal when the time set from the last connect time registered in the table for the unstable terminal has not elapsed and the address of the asynchronous transfer mode terminal has been registered. The maximum tolerant time of step 105 in FIG. 3 can be the same as the maximum tolerant time of step 206 of FIG. 4.

FIG. 5 is a flowchart which illustrates a procedure for determining a released state of an asynchronous transfer mode terminal upon occurrence of an interim local management interface (ILMI) address release event according to an embodiment of the present invention. The ILMI address release event is an activity ~~of terminating~~ involving termination of the connection between the ATM terminal and the ATM switch through the ILMI protocol. The released state can also be referred to as a disconnect state. Referring to FIG. 5, when an interim local management interface address release event is generated [[from]] by the asynchronous transfer mode terminal in step 301, the asynchronous transfer mode switch selects an entry corresponding to the interim local management interface address from the table in step 302, and changes the last disconnect time to the current time in step 303. Thereafter, in step 304, the asynchronous transfer mode switch determines that the asynchronous transfer mode terminal, which has generated the interim local management interface address release event, [[as]] is a terminal in a released state. The released state can also be described as a disconnect state.

As described above, the invention ~~previously~~ detects an unstable asynchronous transfer mode (ATM) terminal before the asynchronous transfer mode address is registered in the asynchronous transfer mode switch through the interim local management interface (ILMI), and defers applying it to the private network-to-network interface (PNNI) module until the asynchronous transfer mode terminal becomes stable, thereby ~~to prevent~~ preventing overload due to overflooding of the asynchronous transfer mode switch.

The foregoing paragraphs describe the details of a method for restricting overflooding due to address registration of an unstable asynchronous transfer mode (ATM) terminal in an asynchronous transfer mode switch, and in particular, the details of a method for restricting overflooding due to address registration of an unstable asynchronous transfer mode terminal through an interim local management interface (ILMI) protocol in an asynchronous transfer mode switch.

While the present invention has been illustrated by the description of embodiments thereof, and while the embodiments have been described in considerable detail, it is not the intention of the ~~applicant~~ inventor to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details, representative apparatus and method, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit or scope of the ~~applicant's~~ general inventive concept.